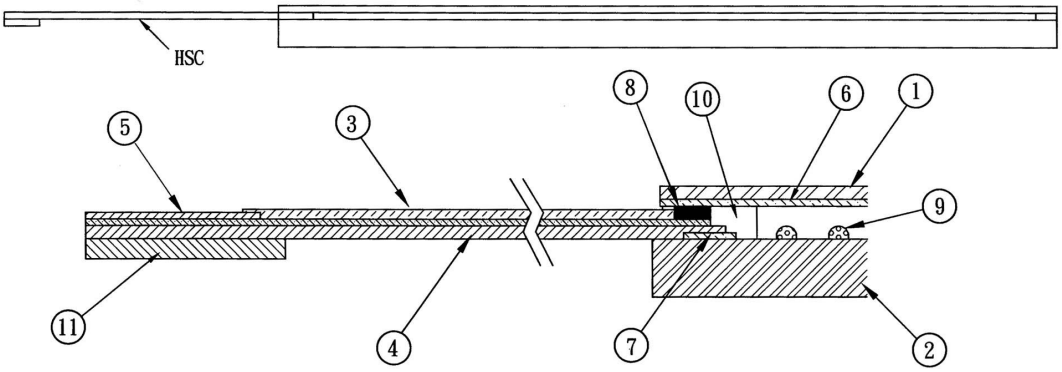
Analog 4-wire PET-On-Glass Touch Screen Specification

1. Mechanical Dimensions and Construction

1.1 General: Analog Resistive touch screen is laminated by ITO PET to ITO glass.
1.2 Construction :

Item	Description	Material	Remarks
1	ITO PET (Top layer)	ITO PET Film	Antiglare coating Surface hardness: 3H Resistance:300~600Ω/□
2	ITO Patterned Glass (Bottom layer)	1.10mm ITO Glass	Resistance:300~600Ω/□
3	Tail Base	PET-Film	Separated Tail
4	Tail Coverlay	PET-Film	
5	Conductor	Carbon	
6	Top layer circuit	Silver ink	
7	Bottom layer circuit	Silver ink	
8	Layer to layer contacted	Silver ink	
9	Dot spacer	UV Cure ink	
10	Isolation Layer	Isolation Adhesive	
11	Stiffener	PET Film	

Touch screen side view:



1.3 Input Method and Activation Force

Input Method	Average Activation Force
1.6mm dia. Delrin stylus	0.10~0.70N
16mm dia. Silicon "finger"	0.10~0.80N

2. Typical Optical Characteristics

2.1 Visible Light Transmission: > 80%
2.2 Haze: < 10% (JIS K-7105)

3. Electrical Specifications

3.1 Operating Voltage: 5.5V or less
3.2 Contact current: 20mA (maximum)
3.3 Circuit close resistance: X : 300-900Ω Y : 300-900Ω
3.4 Circuit open resistance: > 10MΩ at 25VDC
3.5 Contact bounce: < 15ms
3.6 Linear Test : <1.5 %
3.7 Capacitance: < 100nF

4. Linearity

4.1 Linear Test Specification

Direction X: <1.5 %
Direction Y: <1.5 %

4.2 Linearity Test

Apply voltage (DC5V) to upper (or lower) electrodes, output voltage Vx (see Fig.4-1) or Vy (see Fig.4-2) on the other electrodes is measured at every regular intervals.
Linearity is the value of max. error voltage (see Fig. 4-3).

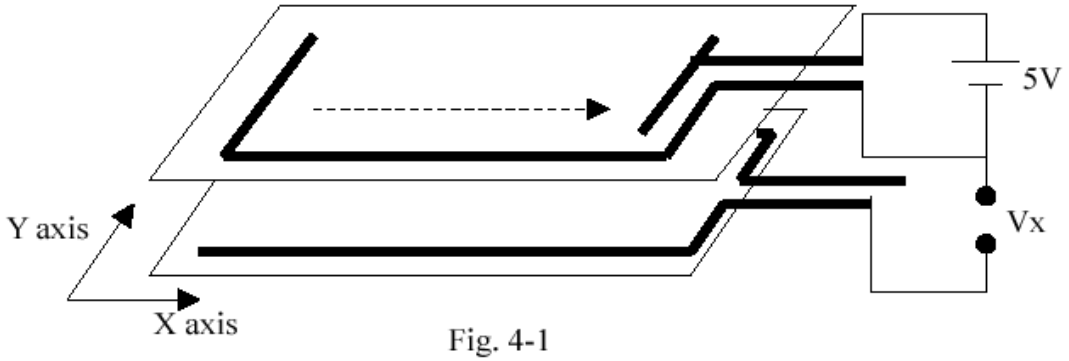


Fig. 4-1

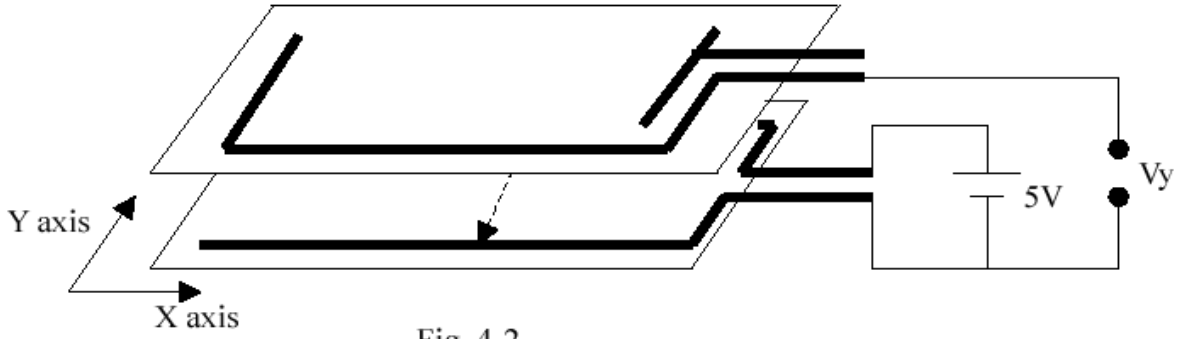
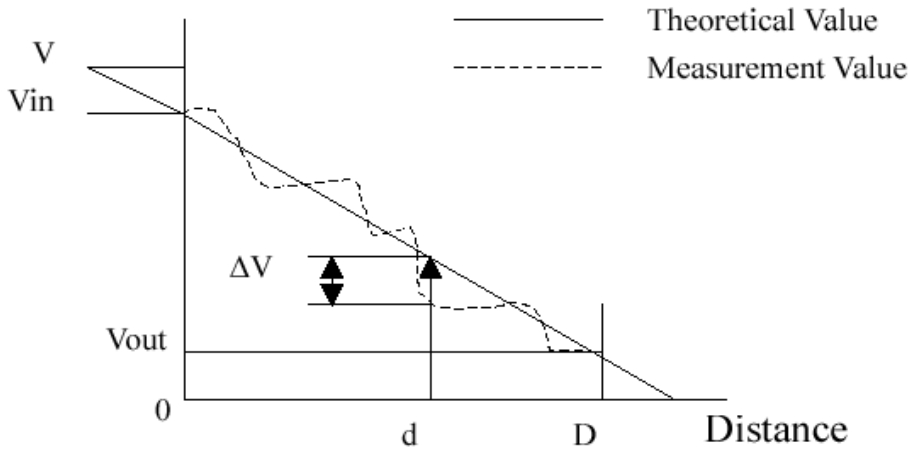


Fig. 4-2



Error voltage= | ΔV | / (Vin-Vout)

Max. error voltage= | ΔVmax | / (Vin-Vout)

Fig. 4-3

5. Environment Specification

5.1 Operating Temperature - 10° C ~ + 60° C Humidity less than 80% RH
5.2 Storage Temperature - 40° C ~ + 80° C at Ambient Humidity

6. Reliability Test

6.1 Exposure to high temperature

Touch panel is put into a test machine at the condition of 80℃ for 120 hours. Then it is left at the room temperature for 24 hours or more. The measurement must satisfy the following:
- Circuit close resistance: as Sec. 3.3
- Circuit open resistance: as Sec. 3.4
- Contact bounce: as Sec. 3.5
- Linearity test: as Sec. 3.6

6.2 Exposure to low temperature

Touch panel is put into a test machine at the condition of -40℃ for 120 hours. Then it is left at the room temperature for 24 hours or more. The measurement must satisfy the following:
- Circuit close resistance: as Sec. 3.3
- Circuit open resistance: as Sec. 3.4
- Contact bounce: as Sec. 3.5
- Linearity test: as Sec. 3.6

6.3 Exposure to constant temperature and humidity

Touch panel is put into a test machine at the condition of 60℃, 90%RH for 120 hours. Then it is left at the room temperature for 24 hours or more. The measurement must satisfy the following:
- Circuit close resistance: as Sec. 3.3
- Circuit open resistance: as Sec. 3.4
- Contact bounce: as Sec. 3.5
- Linearity test: as Sec. 3.6

6.4 Thermal Shock

Touch panel is put into a test machine at the condition of -40℃ for 30 minutes, and then 80℃ for 30 minutes. The process is repeated by 10 cycles. Then it is left at the room temperature for 24 hours or more. The measurement must satisfy the following:
- Circuit close resistance: as Sec. 3.3
- Circuit open resistance: as Sec. 3.4
- Contact bounce: as Sec. 3.5
- Linearity test: as Sec. 3.6

7. Durability test:

7.1 Finger touches

Touch panel is hit 10 millions times with a silicone rubber of R8 finger, hitting rate is by 250g at 2 times per second. The measurement must satisfy the following:

- Circuit close resistance: as Sec. 3.3
- Circuit open resistance: as Sec. 3.4
- Contact bounce: as Sec. 3.5
- Linearity test: as Sec. 3.6

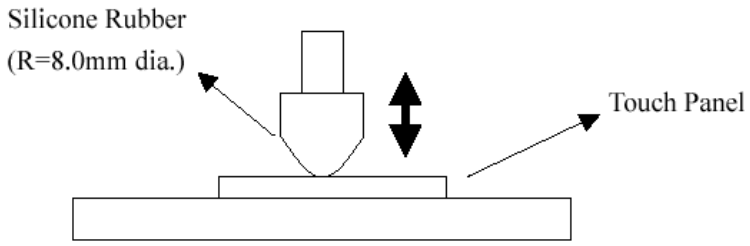


Fig. 7-1

7.2 Stylus writing

Touch panel is drawn by R0.8 stylus pen, at 250g forces, repeat one inch by 100K times. The measurement must satisfy the following:

- Circuit close resistance: as Sec. 3.3
- Circuit open resistance: as Sec. 3.4
- Contact bounce: as Sec. 3.5
- Linearity test: as Sec. 3.6

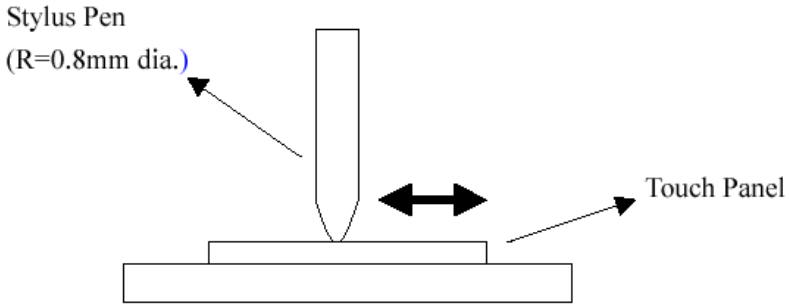


Fig. 7-2

8. Optical Performance

8.1 Optical inspection method and optical defect standards refer to document. 150.9305 〝Touch Screen Optical Quality Standard.〞

8.2 Outside to Viewing Area : any optical defected in this area need to be ignored if no effected to touch screen function.

8.3 Silver Bus Pattern defect : Voids in traces to be less than 50% of the trace width.

8.3.1 Silver Bus Pattern gap: >0.1mm

8.3.2 Silver Bus and Active area gap: No silver ink may project beyond the viewing area.

8.4 Glass defects such as edge chips and scratches refer to 150.9305

8.5 Others

Ideal storage conditions:
Store the touch screen in its original shipping container under normal conditions
(20~25°C, 65% RH)